

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



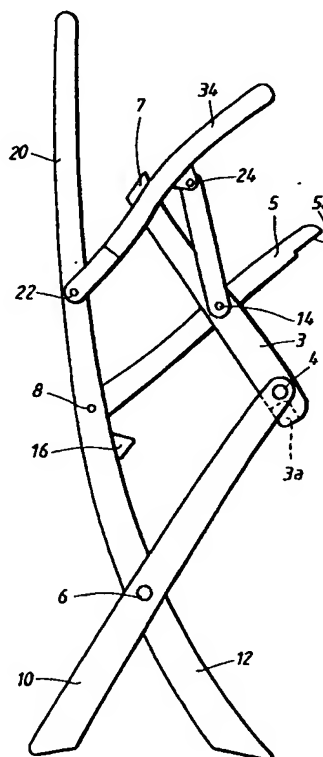
(11) Publication number:

**0 640 304 A1**

(12)

**EUROPEAN PATENT APPLICATION**(21) Application number: **93850165.7**(51) Int. Cl.<sup>6</sup>: **A47C 4/14**(22) Date of filing: **25.08.93**(43) Date of publication of application:  
**01.03.95 Bulletin 95/09**(64) Designated Contracting States:  
**DE DK ES FR GB IT NL SE**(71) Applicant: **PARK MILJÖ I GÖTEBORG AB**  
**Bohusgatan 24**  
**S-411 39 Göteborg (SE)**(72) Inventor: **Hultman, Ake**  
**Bohusgatan 24**  
**S-411 39 Göteborg (SE)**(74) Representative: **Mossmark, Anders et al**  
**Albihn West AB**  
**Box 142**  
**S-401 22 Göteborg (SE)**(54) **Folding furniture.**

(57) The invention relates to a foldable article (1) of furniture, such as a chair, which has a support surface (2), normally a seat portion, pivotally connected to underlying support leg means (10, 12). The support surface comprises a first section (3) and a second section (5), each of which is pivotally connected to a respective one of the support leg means (10, 12) as well as to each other. In this way a neatly and compactly foldable article is provided without requiring any sliding pivots or joints.

**FIG. 3****EP 0 640 304 A1**

### Field of the Invention

The invention relates to a foldable article of furniture, said article being provided with a support surface pivotally connected to underlying support leg means.

In particular the invention relates to articles of furniture which are more commonly known as foldable or collapsible items, such as collapsible chairs, collapsible benches or the like.

### Background to the invention

Articles of furniture of the aforementioned type are known for example from US-A-2 794 492 and US-A-2 574 387.

These prior art arrangements, which relate to folding chairs, have a foldable structure which comprises either a sliding pivot joint or a hook type connection of the individual elements at at least one location. Thus, whilst the chairs can fold into a relatively compact shape in their folded-away position, the slide and hook arrangements of these types of chairs are prone to jamming, sticking and difficulties with locating the elements with respect to each other. This is particularly the case when the chair has been used many times and the components become worn or dirty, or for example where the material of the chair is subject to age variations (e.g. wooden chairs).

One solution to the problem with sliding joints has been to provide high precision components and high quality surface finishes for the joint assemblies such that the sliding movements result in less wear due to low friction. However, even with such precision, lubrication is often required on the sliding surfaces after much handling, which lubrication is unsightly and may cause damage or staining if the chairs are made of wood.

A further problem which arises with such foldable chairs is the difficulty of handling the chair in order to collapse or unfold it. For example, only with very lightweight chairs is the construction according to US-A-2 574 387 easily usable, since the chair must first be lifted in order to effect folding.

One of the objects of the present invention is thus to arrive at an article of furniture which does not require sliding joints and in particular sliding pivot joints.

A further object of the invention is to arrive at an article of furniture which is readily foldable into a collapsed (folded-away) position and into a position of use (folded-out position).

### Summary of the invention

The invention aims to overcome the disadvantages associated with the above mentioned types

of chairs and with other known articles of folding furniture by a novel construction which allows easy manageability without requiring the use of any sliding pivot joints or hook connections.

The invention achieves this aim by the provision of an article of furniture having the features defined in claim 1. Preferred features of the invention are defined in the dependent claims.

Further objects and advantages of the invention will apparent to the skilled man upon reading the following description of a preferred embodiment, described with reference to accompanying drawings.

### Brief description of the figures

- Fig. 1 shows a side view of a chair constructed in accordance with the invention in a folded-out position,  
 Fig. 2 shows a perspective view of the chair of Fig. 1,  
 and Fig. 3 and Fig. 4 show a side view of the chair of Fig. 1 in an intermediate folded position and a final folded position respectively.

### Description of a preferred embodiment

Fig.1 shows an article of furniture 1 which, in the preferred embodiment, is a chair. The chair is generally symmetrical about a plane passing through the middle of the seat, i.e. midway between the two armrests 34 and 36 (see Fig.2), although the provision of no armrests, only one armrest or more than two armrests is possible.

The chair has a support surface 2 which is formed by two relatively rigid sections, a first section 3 and a second section 5 (see Fig.3). These sections 3, 5 are pivotally connected to each other by means of a pivot pin 14, located approximately mid-way between the pivots 4 and 8. The pivots 4 and 8 in turn designate the respective pivot connection locations of the sections 3 and 5 to the underlying support leg means 10 and 12, each of which has two lower ends (or feet) contacting the ground, thus giving a total of four spaced locations. Other types of support leg means are however imaginable.

The support leg means 10 and 12 are joined to one another at a pivot location 6 positioned approximately equidistantly from the base of each of the leg means 10 and 12 respectively.

As can be seen more clearly in Fig.2 and Fig.3, the first section 3 is formed as a substantially U-shaped frame (as seen from above) which has two arms 32, 34 lying on respective sides of the second section 5. The arm 30 is connected to arm 32 proximate the front edge of the chair by a cross

member 26.

The first section 3 has two free ends 7 which are supported on the backrest 20 of the chair by means of a cross brace 16 spanning the two leg portion 12, 12' of the support leg means 12.

At the front edge of the chair the first section and the second section are each provided with cooperating portions 3a and 5a respectively. In the folded-out position as shown in Fig.1, the portion 5a overlies and is supported on the portion 3a (normally formed on member 26), as shown in hidden detail lines in Fig.1. This provides a very stable and secure construction for the chair since any load applied to the surface 2 is taken by sections 3 and 5 which are each supported by the cross brace 16 as well as the section 5 being supported by the front edge arrangement of 3a and 5a. With such an arrangement the central pivot 14 will thus be in a relatively unloaded condition.

The cross member 26 may also be provided with a cut-away portion 28 to allow easy access to the front lip of the section 5, in order that a user may easily grip the front lip for folding away the chair.

In the embodiment illustrated, the member 26 lies behind the front lip of the second section 5 (see e.g. Fig.1). However the member 26 may itself form the front lip of the support surface. If desired, in this case, easier access can be gained to the second section 5 (for folding away) by the provision of a cut away portion (not shown), similar to the shape 28, allowing insertion of a hand between the member 26 and the second section 5.

The chair may be provided with an arm rest portion 34, 36 which is pivotally connected, as shown in Fig.1, at locations 14, 22 and 24. In this way, the pivot 14 may serve as the pivot location not only for connecting the two sections 3 and 5, but also for the armrest.

Precise details of the pivot connections are not shown in the figures, but it will be clear to the skilled person that the pivots may be of any suitable type. For example the pivot 24 need not be a pin connection but could be a hinge type for instance. Similarly the pivot 8 may extend as one pin through the whole second section 5, but may be formed as two separate pin sections extending from either side to whatever distance is appropriate.

In order to fold the seat away from its folded-out position in Fig.1 and Fig.2, the user may take hold of the front edge of the second section 5, e.g. on the part 5a, and lift upwardly whilst preventing the leg means 10 from moving backwardly. Continued upward movement of the section 5 will thus collapse the chair fully into the position shown in Fig.4. Folding-out again is merely a matter of moving the second section 5 downwardly.

Folding away of the chair may also be accomplished by lifting one of the members 30, 32 of the first section and moving this upwardly. When no armrest is provided it will be clear that no obstacle prevents continuous upward movement from the sides of the chair and similarly when only one armrest is provided, access will be easiest from the side with no armrest.

Whilst it is not essential, the comfort of the chair can be enhanced by arranging the height of the sections 3 and 5 to be such that the upper surfaces of sections 3 and 5 of the seat 2 are substantially at the same level. This can be achieved by appropriate location of the pivot point 14 with respect to the chosen material depth of each of the sections 3 and 5 at the pivot location 14.

The resultant chair is thus stable, easily manageable even when heavy (e.g. large wooden chairs) and obviates the use of sliding hinges, sliding pivots or fastening means such as hooks.

Whilst the invention has been described with reference to the embodiment shown in the drawings, it will be appreciated by those skilled in the art that many variations are possible within the scope of the invention as defined by the appended claims. For example, whilst the invention has been explained with reference to a chair, other articles of furniture are also encompassed by the invention such as foldable tables, stools, benches and the like which provide a support surface for articles or people.

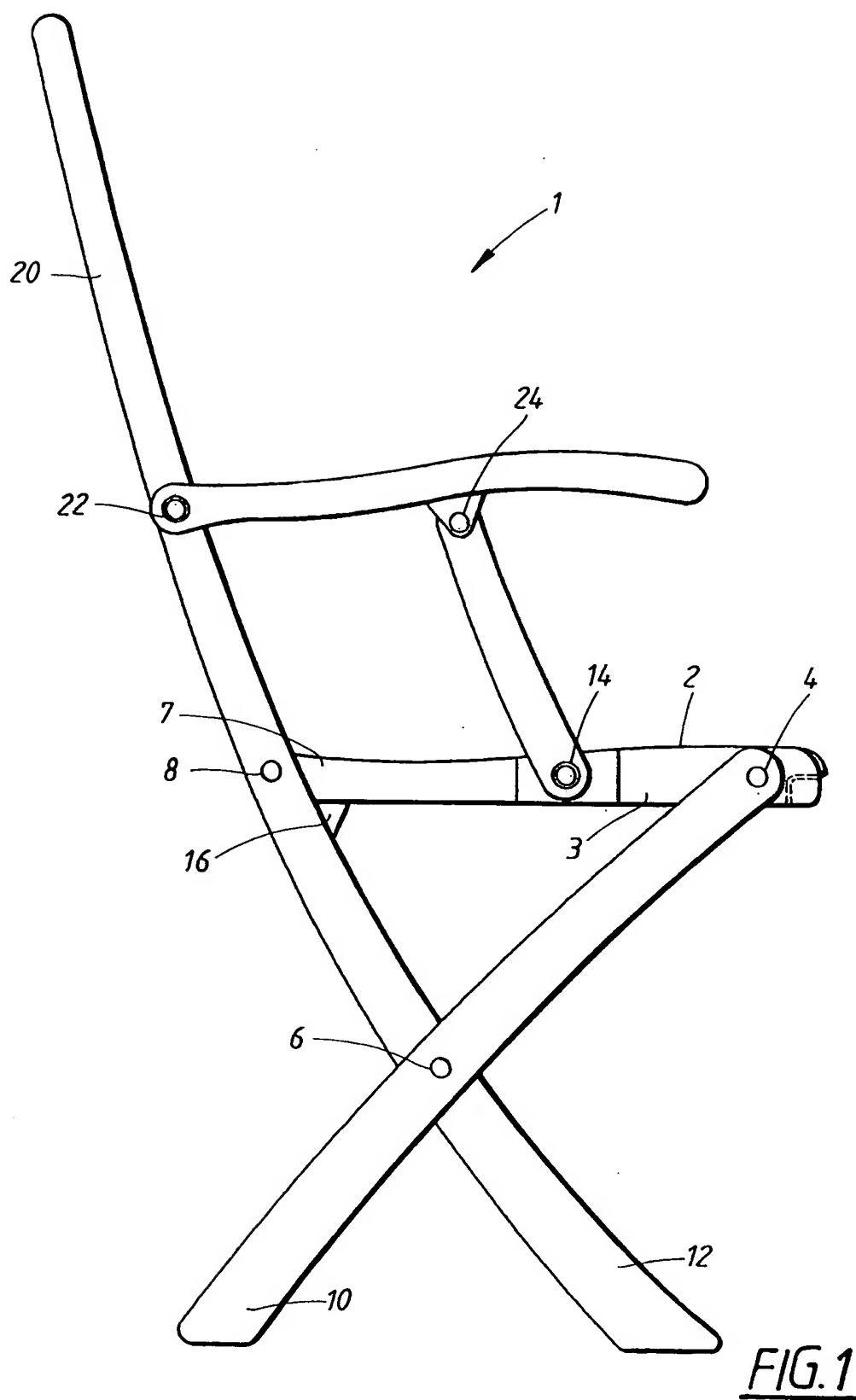
## Claims

1. Foldable article (1) of furniture, said article being provided with a support surface (2) pivotally connected to underlying support leg means (10, 12), characterized in that said support surface comprises a first section (3) and a second section (5), each of said sections being pivotally connected to a respective one of said support leg means (10, 12) and to each other.
2. Foldable article according to claim 1, characterized in that the first and second sections (3, 5) are pivotally connected to each other at a location (14) remote from their respective ends.
3. Foldable article according to either of claims 1 or 2, characterized in that there are two underlying support leg means (10, 12) connected to each other at a pivot location (6).
4. Foldable article according to any one of the preceding claims, characterized in that in

that a portion (5a) of said second section (5) overlies and is supported on a portion (3a) of said first section (3) in the folded-out position of the article.

5. Foldable article according to any one of the preceding claims, **characterized in that**, in the folded-out position, the upper surface of the first section (3) and the upper surface of the second section (5) are at substantially the same level. 5 10
6. Foldable article according to any one of the preceding claims, **characterized in that** said first section, in plan view, comprises a substantially U-shaped outer frame. 15
7. Foldable article according to any one of the preceding claims, **characterized in that** the foldable article has a backrest (20) and in that the support surface (2) forms a seat portion, said overlying portions (3a, 5a) of said first and second sections being positioned at the edge remote from the backrest, and in that said first and second sections (3, 5) forming said support surface (2) are attached to said leg means (10, 12) at respective first and second spaced pivot locations (4, 8). 20 25
8. Foldable article according to any one of the preceding claims, **characterized in that** all pivot locations (4, 6, 8, 10, 14, 22, 24) on the article are substantially fixed with respect to said article, so that no sliding pivot locations or joints are provided. 30 35
9. Foldable article according to any one of the preceding claims, **characterized in that** a cross brace (16) is provided at a location such that it provides support for the first and the second sections (3a, 5a) in the folded-out position. 40
10. Foldable article according to any one of claims 5 to 9, **characterized in that** the member (26) of the U-shaped frame which joins together the two free arms (30, 32) of the U-shaped member is provided with a recessed portion (28) to give easy access to the front edge of the second section (5). 45 50

55



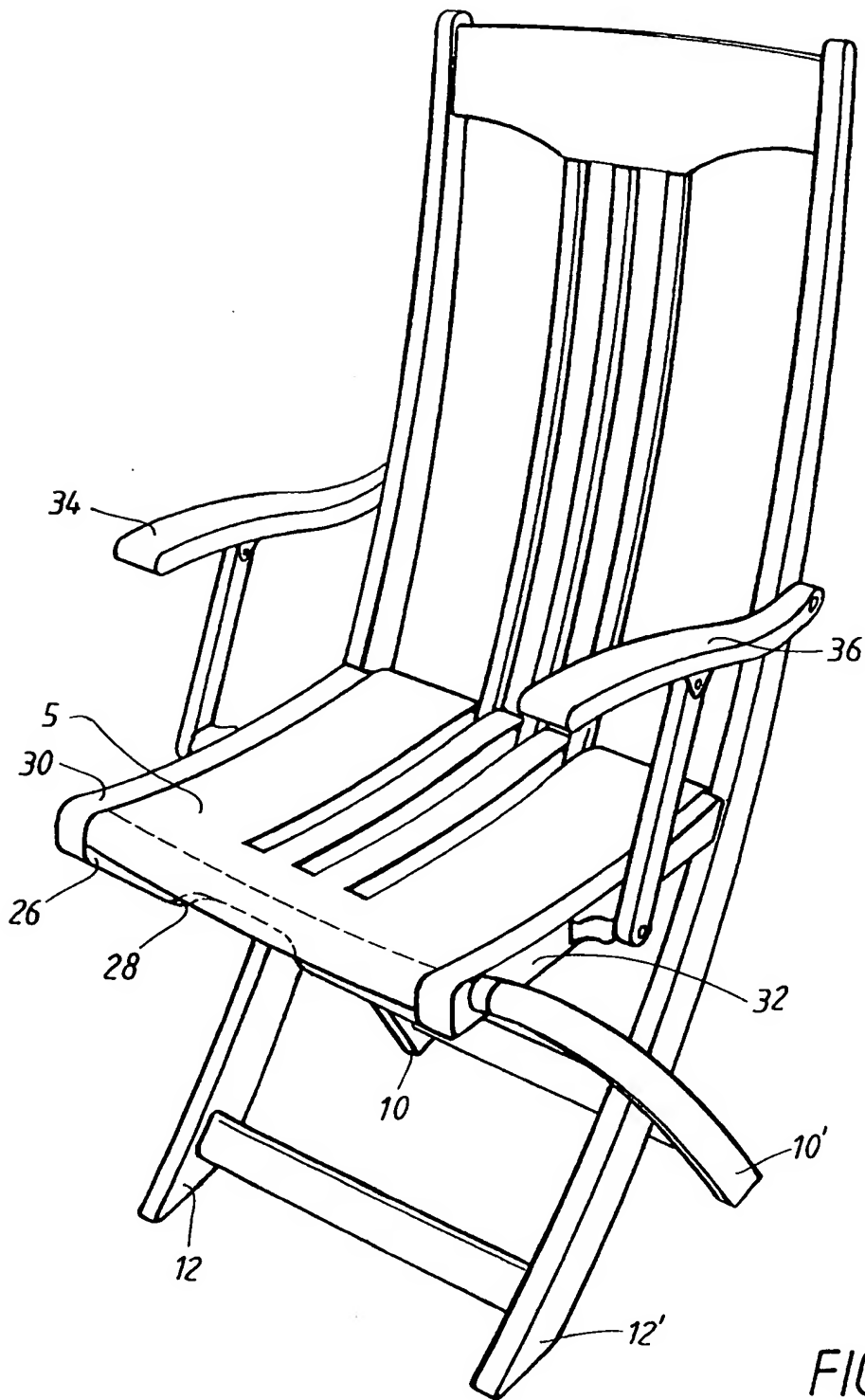


FIG. 2

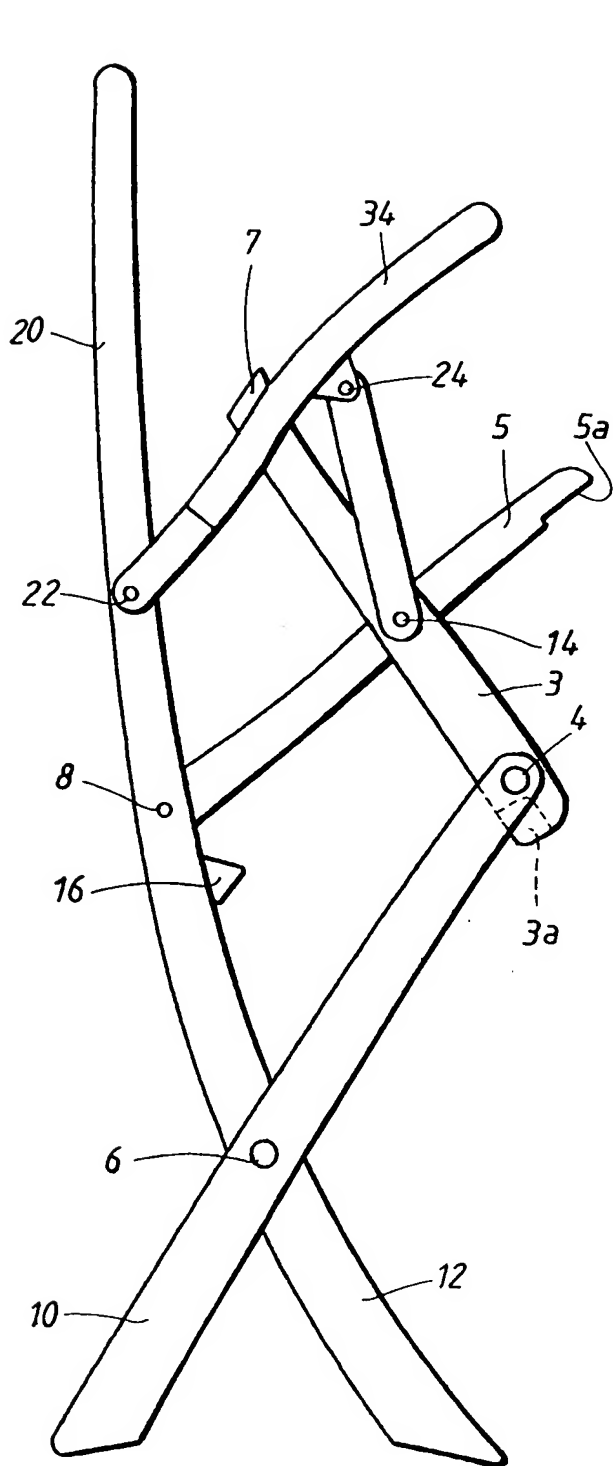


FIG. 3

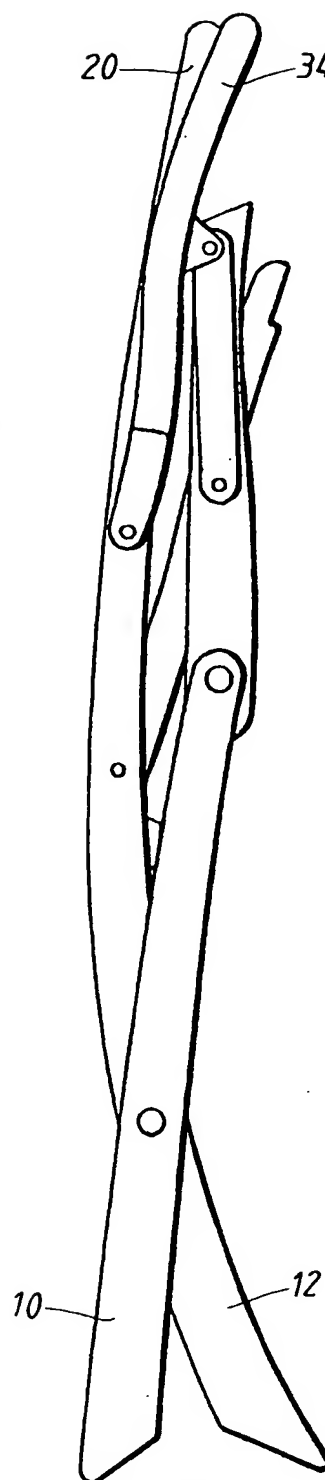


FIG. 4



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 93 85 0165

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-1 959 046 (WELLIVER) * the whole document * ---	1-3,8,9	A47C4/14
X	US-A-1 989 865 (JOHANSON) * the whole document * ---	1-3,8	
X	CH-A-185 102 (URECH) * the whole document * -----	1-3,8	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 January 1994	Examiner Mysliwetz, W
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure F : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document	